

Abstract Submitted
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Surface currents on the plasma-vacuum interface in MHD equilibria¹ JAMES D. HANSON, Auburn University — The VMEC¹ non-axisymmetric MHD equilibrium code can compute free-boundary equilibria². Since VMEC assumes that magnetic fields within the plasma form closed and nested flux surfaces, the plasma-vacuum interface is a flux surface, and the total magnetic field there has no normal component. VMEC imposes this condition of zero normal field using the potential formulation of Merkel³, and solves a Neumann problem for the magnetic potential in the exterior region. This boundary condition necessarily admits the possibility of a surface current on the plasma-vacuum interface. While this current may be small in MHD equilibrium, this current may be readily computed in terms of a magnetic potential in both the interior and exterior regions. Examples of the surface current for VMEC equilibria will be shown. ¹ Hirshman S P and Whitson J, Phys. Fluids **26** 3553 (1983) ² Hirshman S P, Van Rij W I and Merkel P, Comp. Phys. Comm. **43** 143–55 (1986) ³ Merkel P, J. Comp. Phys. **66** 83–98 (1986)

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